

NTPRINT Macro - Print File Assignments

With NTPRINT macros, you define the print files to be used during the session. Within a session, up to 31 logical print files (numbered 1 to 31) can be used.

For an online session, all print files to be used have to be defined with an NTPRINT macro (or with the corresponding dynamic profile parameter PRINT).

The software components for accessing print files in different environments are called *access methods*. For the duration of a Natural session, each logical print file can be attached to only one access method. The access method for a print file is determined by the keyword parameter AM (see below).

In a batch session, any print files not attached to a specific access method will automatically be detected by the standard batch access method, provided that they have been predefined in the JCL.

Alternatively, OS/390 batch print files need not be predefined in the JCL. They can be defined with the subparameter AM=STD of the NTPRINT macro or PRINT parameter and allocated dynamically during the session by a Natural program using the DEFINE statement or user exit USR2021.

See also FAMSTD - Overwriting of Print and Work File Access Method Assignments.

This document covers the following topics:

- NTPRINT Syntax
- NTPRINT Keyword Parameters for All Environments
- NTPRINT Keyword Parameters for AM=STD in All Environments
- NTPRINT Keyword Parameters for AM=STD in OS/390 Environments
- NTPRINT Keyword Parameters for AM=STD in VSE/ESA Environments
- NTPRINT Keyword Parameters for AM=STD in BS2000/OSD Environments
- NTPRINT Keyword Parameters for AM=COMP
- NTPRINT Keyword Parameters for AM=IMS
- NTPRINT Keyword Parameters for DEFINE PRINTER Statement
- NTPRINT Alternative

NTPRINT Syntax

In an NTPRINT macro, you first specify one or more logical print file numbers, and then several keyword parameters, which define the characteristics which are to apply to these print files:

NTPRINT (*print-file-numbers*),*keyword-parameters*,...

print-file-numbers

The file numbers must be specified first and enclosed in parentheses. The numbers can be from 1 to 31. They can be specified in any sequence. Multiple numbers must be separated from one another by commas or blanks. To specify a range of numbers, you can use a hyphen (-).

keyword-parameters

The various types of keyword parameters are described below.

For print files with different characteristics, you specify different NTPRINT macros.

Examples:

```
NTPRINT ( 2,12,18 ),AM=STD,DEST='PRINT**',OPEN=INITOBJ,CLOSE=CMD NTPRINT
( 1,3,6-11,15 ),AM=NAF
```

NTPRINT Keyword Parameters for All Environments

The following keyword parameters are available: AM | DEST | OPEN | CLOSE

AM - Type of Access Method

AM=xxx specifies the type of access method to be used:

STD	Standard sequential batch files (batch, TSO, TIAM, CMS OS simulation).
COMP	Com-plete print files.
NAF	Natural Advanced Facilities.
PC	Entire Connection.
CMS	CMS disk and SFS files.
USER	Third-party vendor print interface.
OFF	Unassigned. No automatic assignments if FAMSTD=OFF is set.
0	Unassigned. Automatic assignments if FAMSTD=OFF is set.

Note:

PRINT=OFF is equivalent to: PRINT=((1-31)), AM=OFF).

It does not affect any of the other keyword specifications.

The output destination is specified by parameter DEST.

DEST - External Dataset Name

DEST=name specifies the external dataset name (1 - 8 characters).

This corresponds to the OUTPUT value of the DEFINE PRINTER statement (and can be overwritten by a DEFINE PRINTER OUTPUT specification).

The meaning of this keyword parameter depends on the access method. For AM=STD, it is the logical dataset name (DDNAME).

If the destination is to be for multiple files, two asterisks (**) have to be specified for the file number. These will then be replaced by the corresponding logical file number for each print file.

The default value of DEST depends on the access method. For AM=STD, the default is DEST='CMPRT**' (note that a DEST value including two asterisks must be enclosed in apostrophes when using it as a dynamic parameter).

Under CICS	There is no DEST default value for print files under CICS. Here, the DEST parameter is mandatory, that is, CICS print files without a valid DEST specification are ignored.
Under CMS	For usage of DEST under CMS, refer to Natural under VM/CMS (in the Natural Operations documentation for mainframes).
Under VSE/ESA	Only 7-character names are supported.

OPEN - Time of File Opening

OPEN=xxx determines when the file is to be opened:

Option	The file is opened
INIT	for output at session initialization.
OBF	sets the default OPEN value for the different environments (Batch, CICS, Com-plete, TSO).
OBJ	The file is opened when the execution of the first object which accesses the file starts (this is the general default, besides for AM=COMP and AM=IMS).
OBJ1	The file is opened when the execution of the first object on level 1 which accesses the file starts. Otherwise, it is opened when it is first accessed.
ACC	The file is opened when it is first accessed by a statement (this is the default for AM=COMP and AM=IMS).
INITOBF	for output at session initialization. Any subsequent re-opening of the file sets the default OPEN value for the different environments (Batch, CICS, Com-plete, TSO).
INITOBJ	for output at session initialization. Any subsequent re-opening of the file will be performed when the execution of the first object which accesses the file starts.
INITOBJ1	The file is opened when the execution of the first object on level 1 which accesses the file starts. Otherwise, it is opened when it is first accessed.
INITACC	for output at session initialization. Any subsequent re-opening of the file will be performed when it is first accessed by a statement.

CLOSE - Time of File Closure

CLOSE=xxx determines when the file is to be closed:

Option	The file is closed
OBJ	when processing of the object in which it was first accessed is finished.
CMD	when command mode, NEXT mode or MAINMENU is reached (this is the default for AM=NAF, AM=COMP and AM=IMS).
FIN	at session end (this is the default for AM=STD). With CLOSE=FIN, a DEFINE PRINTER or CLOSE PRINTER statement does not cause the print file to be closed.
CLOSE=USER	This value specifies that a print file is closed only if the file is open and one of the following conditions is true: <ul style="list-style-type: none"> • a CLOSE PRINTER statement is issued, • a DEFINE PRINTER statement is issued, • at session termination.

NTPRINT Keyword Parameters for AM=STD in All Environments

The following keyword parameters are available: RECFM | BLKSIZE | LRECL | TRUNC | PAD

RECFM - Default Record Format of Dataset

RECFM=xxxx determines the default record format of the dataset.

The following formats are supported:

F	Fixed
V	Variable
U	Undefined
B	Blocked
S	Spanned
A	ASA
M	Machine control characters

The following values and also combinations of values are possible:

Possible value:	F, FA, FM, FB, FBA, FBM, V, VA, VM, VB, VBA, VBM, VBS, VBSA, VBSM, U, UA, UM.
Default value:	RECFM=VBA (variable blocked with ASA).

The RECFM specification only applies if no record format is predefined in the JCL or in the dataset DCB (OS/390 only).

BLKSIZE - Default Block Size of Dataset

BLKSIZE=nnnnn determines the default block size (in bytes) of the dataset.

Possible values:	0, or 8 to 32767.
Default value:	1016.

The BLKSIZE specification only applies if no block size is predefined in the JCL or in the dataset DCB (OS/390 only).

LRECL - Default Record Length of Dataset

LRECL=nnn determines the default record length (in bytes) of the dataset.

Possible values:	0, or 5 - 254.
Default value:	0

This parameter is used particularly to check for truncation and padding.

- For RECFM=V (B) the LRECL value includes a 4-byte record descriptor word.
- If LRECL = 0 is defined, the following applies:
- With RECFM = V (B), LRECL defaults to the minimum of BLKSIZE-4 and 254.
- With RECFM = U, LRECL defaults to BLKSIZE.
- With RECFM = F (B), the maximum record length in the Natural program being executed is taken when the file is opened. If no record length from a program is available when the file is opened, for example with OPEN=INIT, a record length of 132 is taken (plus 1 for ASA or a machine control character and/or plus 4 for a record-descriptor word if the record format is variable).

The LRECL specification only applies if no record length is predefined in the JCL or in the dataset DCB (OS/390 only).

TRUNC - Truncation of Output Records

TRUNC=ON/OFF determines whether the output records are truncated:

ON	Output records that are longer than the record length (LRECL) of the dataset will be truncated (this is the default).
OFF	Error NAT1512 will be issued if an output record is longer than the dataset record length.

PAD - Padding of output records

PAD=ON/OFF determines whether the output records are padded with blanks (applies only to datasets of fixed record length):

ON	Output records that are shorter than the record length (LRECL) of the dataset will be padded with blanks (this is the default).
OFF	Error NAT1510 will be issued if an output record is shorter than the dataset record length.

NTPRINT Keyword Parameters for AM=STD in OS/390 Environments

The following keyword parameters are available: REREAD | FREE | ASA | BUFNO | DISP | VMAX

REREAD - Option for Closing of Tape File

REREAD=xxx sets the REREAD option for the closing of the tape file:

ON	The REREAD option is set for the CLOSE SVC. This causes the volume to be repositioned to reprocess the dataset (this is the default).
OFF	The REREAD option is not set for the CLOSE SVC.

FREE - Dataset De-allocation at File Closure

FREE=xxx determines whether the dataset is de-allocated when the file is closed:

ON	The FREE option is set for the CLOSE SVC, which means that the dataset is de-allocated when it is closed (and not at step termination).
OFF	The FREE option is not set for the CLOSE SVC (this is the default).

ASA - Use of ASA Record Format

ASA=xxx determines whether the ASA record format is used.

ON	Enforces ASA record format, regardless of the RECFM setting in the DCB or the RECFM subparameter.
OFF	Default value.

BUFNO - Default Number of OS/390 I/O Buffers of Dataset

BUFNO=*nnn* defines the default number of OS/390 I/O buffers of the dataset.

Possible values	0 - 255.
Default value	0. In this case, OS/390 allocates five I/O buffers per default.

The number of I/O buffers can improve the performance of print file access dramatically. Note that the storage for I/O buffers is allocated below the 16 MB line.

The BUFNO specification applies only if the BUFNO value is predefined in the JCL.

DISP - Open Print File for Modification

DISP=MOD determines whether the print file is opened for modification, i.e. the new records are added at the end of the file.

This corresponds to the JCL DD statement subparameter DISP=MOD.

VMAX - Control LRECL for Variable Record Format

VMAX controls the LRECL setting for an output file with variable record format (RECFM=V).

ON	Providing a nonzero BLKSIZE value exists for the file, VMAX=ON sets LRECL=BLKSIZE-4 for variable record format, regardless of the LRECL setting in the DCB or the LRECL subparameter.
NAT	LRECL is set to the length +4 of the largest record in the application program if this value is less than LRECL in the DCB for the dataset.
OFF	LRECL from the DCB for the dataset is used. Default value.

NTPRINT Keyword Parameters for AM=STD in VSE/ESA Environments

The following keyword parameters are available: SYSNR | LABEL | REWIND

SYSNR - Logical VSE SYS Number

SYSNR=*nn* determines the logical VSE SYS number.

Possible values:	1 - 99.
Default value:	By default, the SYS number is print file number plus 40; for example, VSE default SYS number for print file 11 is 11 + 40 => SYS051.

LABEL - Tape Label Processing

LABEL=*xxx* determines the tape label processing:

ON	The tape is in standard label format (this is the default).
OFF	The tape is unlabeled with front tape mark.
NOTM	The tape is unlabeled without front tape mark.

REWIND - Action at File Closure

REWIND=xxx determines the action to be taken when a tape file is closed:

ON	The tape is rewound when the file is closed (this is the default).
OFF	The tape is not rewound when the file is closed.
UNLOAD	The tape is unloaded when the file is closed.

NTPRINT Keyword Parameters for AM=STD in BS2000/OSD Environments

The following keyword parameter is available: DISP

DISP - File Open Mode

DISP=xxx determines the open mode of the file:

EXT	The open mode is set to EXTEND.
All user values	The open mode is set to the default value OUTPUT.

NTPRINT Keyword Parameters for AM=COMP

The following keyword parameter is available: DRIVER

DRIVER - Name of Com-plete Print Driver

DRIVER=name specifies the *name* of the Com-plete print driver to be used.

NTPRINT Keyword Parameters for AM=IMS

The following keyword parameter is available: DRIVER

DRIVER - Name of Natural IMS Print Driver

DRIVER=name specifies the *name* of the Natural IMS print driver to be used.

For possible values, see NIMPARM Macro Parameters and Support of the Natural WRITE (*n*) Statement in the section Natural under IMS/TM in the Natural TP Monitor Interfaces documentation.

NTPRINT Keyword Parameters for DEFINE PRINTER Statement

With the following keyword parameters, you can set default values for the DEFINE PRINTER statement options of the same names (see the Natural Statements documentation). When a printer is closed, all DEFINE PRINTER statement options are reset to their default values.

The following keyword parameters are available: PROFILE | NAME | FORMS | DISP | COPIES | CLASS | PRTY

PROFILE - Name of Printer Control Characters Table

PROFILE=*name* specifies the *name* of printer control characters table (NTCCTAB macro).

NAME - Name of Listing

NAME=*name* specifies the listing *name*.

FORMS - Name of Listing Forms

FORMS=*name* specifies the listing forms *name*.

DISP - Listing Disposition

DISP=*disposition* specifies the listing *disposition* (HOLD, KEEP, DELETE or LEAVE).

COPIES - Number of Copies

COPIES=*nnn* specifies the number of copies to be printed (1 - 255).

CLASS - Spool Class

CLASS=*class* specifies the spool class (1 byte).

PRTY - Listing Priority

PRTY=*nnn* specifies the listing priority (1 - 255).

NTPRINT Alternative

Instead of the NTPRINT macro, you can also use the dynamic profile parameter PRINT. With the PRINT parameter, you have to specify the entire string of values enclosed in parentheses.

Example:

```
PRINT=( ( 1 , 2 , 5-12 , 18 ) , AM=STD , OPEN=INITOBJ , CLOSE=OBJ )
```